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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,052	05/20/2004	Jong Jin Park	P25330	6744

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GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

EXAMINER
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PETTITT, JOHN F

ART UNIT	PAPER NUMBER
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3744

NOTIFICATION DATE	DELIVERY MODE
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05/22/2007

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

## Office Action Summary

Application No.

10/849,052

Applicant(s)

PARK, JONG JIN

Examiner

John Pettitt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02/27/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 02/27/2007 have been fully considered but they are not persuasive. The applicant argues that Weeks does not disclose the claimed packing. The Examiner respectfully disagrees, and refers the applicant to the cited section of Weeks (column 1, lines 16-24) by the applicant. The rejection of claim 1 relies on the well-known fact (taught by Weeks) that gaskets are commonly employed in Stirling refrigerators between mating surfaces, such as the bolted flange of Choi, for the purpose of enhancing the seal of the mating surfaces. Both the gasket and the location of the gasket are standard means of improving seals. Therefore the rejection of claims 1 and 3-10 is proper and remains.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 and 3-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (Korean patent application No. 10-2003-0066151) hereafter Choi in view of Weeks (US 4,842,287) hereafter Weeks.

**In regard to claim 1**, Choi teaches a case (120 - Fig. 1) provided with a cold tip (350) at an end thereof; a cylinder (150) fixedly installed in the case (120) and provided with a piston (140) capable of reciprocating therein; a displacer (310) installed in the

piston (140) such that the displacer (310) can reciprocate; a regenerator (330) positioned between the displacer (310) and the cold tip (350); a heat exchanger (200) connected to the regenerator (330) and the cylinder (150).

Choi teaches that the heat exchanger (200) includes an inner heat exchanger (210) installed in a heat exchange chamber positioned between the cylinder (150) and the case (120), and an outer heat exchanger (220) installed on an outer surface of the case (120) opposite to the inner heat exchanger (210). Choi teaches a flange (through which bolts run through, just above or to the right of the heat exchanger 200 in Fig. 1) protruding from an outer surface of the cylinder (150) and a stair of the case (110) on which the flange is seated in a radial direction of the cylinder (relative to the cylinder, the stair of the case 110 is positioned in a radial direction of the cylinder).

The only limitation that is not taught explicitly by Choi is a packing (interpreted as a gasket, O-ring, or other elastic material employed for sealing mating parts) positioned between the flange of the cylinder and the stair of the case.

However, as taught by Weeks, gaskets and O-rings are the most common means of sealing pressurized devices such as Stirling coolers (column 1, lines 10-23) at mating surfaces, and therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ a gasket between the mating flange of the cylinder and stair of the case of Choi as taught by Weeks, for the purpose of providing a more complete seal for the Stirling cooler than the bolted flange alone. Employing gaskets in bolted flanges is standard practice and renders no unexpected result. Those of ordinary skill in the art would be both capable and motivated to provide

such a gasket at the flange of the cylinder and stair of the case of Choi with no experimentation and nearly guaranteed expectation of success.

**In regard to claim 3**, Choi teaches that an O-ring (156 - Fig. 2) is installed at an outer surface of the cylinder (150) opposite to the inner heat exchanger (210).

**In regard to claim 4**, Choi teaches that an O-ring (156) is installed at a portion of the cylinder (150) contacting the case (120) in an axial direction (relative to the position of the bolted cylinder flange and case stair seal) of the cylinder (150).

**In regard to claim 5**, see claim 1 and 4.

**In regard to claim 6**, see claim 1.

**In regard to claim 7**, as the cylinder (150) of Choi ('151) is cylindrical - the flange of Choi ('151) has a ring shape.

**In regard to claim 8**, it is common in the art for a packing (gasket) to have through holes when the packing is positioned between bolted surfaces. This ensures that the flange need not be extended to position the packing (gasket). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ a gasket with through holes to allow the bolts of Choi to pass through the packing and seal the mating flange of the cylinder and stair of the case together for the purpose of maintaining the same sized flange and stair (not requiring a larger area to position the gasket).

**In regard to claim 9**, the position of the packing (gasket) as discussed in claim 1 renders the packing to be ringed shaped (due to the cylindrical shape of the cylinder flange and stair) and inserted onto the outer surface of the cylinder.

**In regard to claim 10**, the packing (gasket) of the combination discussed for claim 1 would inherently have a radius for defining a distance from the center thereof to the outer circumference thereof because the cylinder flange and the stair of the case are cylindrical. In addition, as the radius of the packing (gasket) would be made to fit the mating surfaces of the stair of the case and the flange of the cylinder, the radius of the packing (gasket) would to be the same as a radial distance from the center of the cylinder (150) to the flange of the cylinder.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JFP III  
May 2, 2007

  
CHERYL TYLER  
SUPERVISORY PATENT EXAMINER